

## REMARKS

This Amendment is in response to the Office action mailed on September 6, 2006. A petition for three-month extension of time and a check in the amount of \$1,200.00 (including the extension fee of \$1,020.00, plus the fee of \$180.00 for a Supplemental Information Disclosure Statement) is being submitted herewith. In the event any additional fees are necessary in conjunction with the present Amendment, kindly charge the cost thereof to our Deposit Account No. 13-2855.

### Status of the Claims

Claims 1-5, 7-24, and 26-44 are pending in the application. Claims 6 and 25 are cancelled. Claim 21 was objected to, claims 2-3, 6, 28 and 29 were rejected under 35 U.S.C. § 112, second paragraph, claims 1-7, 10, and 12-16 were rejected under 35 U.S.C. § 102(b), claims 1-7, 9, 10, 12, 13, 16, 21-27, 31-34, 36, 38, 39, 42, and 44 were rejected under 35 U.S.C. § 102(e), and claims 8, 11, 17-20, 28, 29, 30, 35, 37, 40, 41, 43 and 45 were rejected under 35 U.S.C. § 103(a).

### General Authorization Under 37 CFR 1.136

It is hereby requested that any paper filed in connection with the present application which may require a petition for extension of time be constructively considered as including a petition for extension of time for the requisite length of time. In the event any fees are necessary at any time during this application, it is hereby authorized that such fees be charged to Deposit Account No. 13-2855, under Order No. 31007/32003.

### Claim Objections

Claim 21 was objected to due to the language "at last" in line 4. Claim 21 is now amended by substituting "at least" for the objected language "at last". It is believed that this amendment overcomes the objection. Claim 21 was further amended to delete the second

occurrence of the phrase “with fluid pressure in a selected range” in order to correct a typographical error.

#### 35 U.S.C. §112 Rejections

Claims 2-3, 6, 28, and 29 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to point out and distinctly claim the subject matter which the applicants regard as the invention. According to the Office action, the “first body” in claim 2, “the body” in claim 28, and “the other part slidable” in claim 29 lack sufficient antecedent basis, and the limitation of claim 6 allegedly does not appear to further limit the claimed invention.

Claim 2 has been amended to add “end” after “the first body”, which now has adequate antecedent basis and is believed to overcome the rejection.

Claim 28 has been amended to add “member” after “the body”, so as to provide antecedent basis.

Claim 29 has been amended to add “of the rotary bearing slidably” instead of “slidable” in order to make the claim language more clear. It is respectfully submitted that claim 29, as amended, does not have an antecedent basis problem.

Without conceding the merits of the rejection of the claim, claim 6 has been canceled.

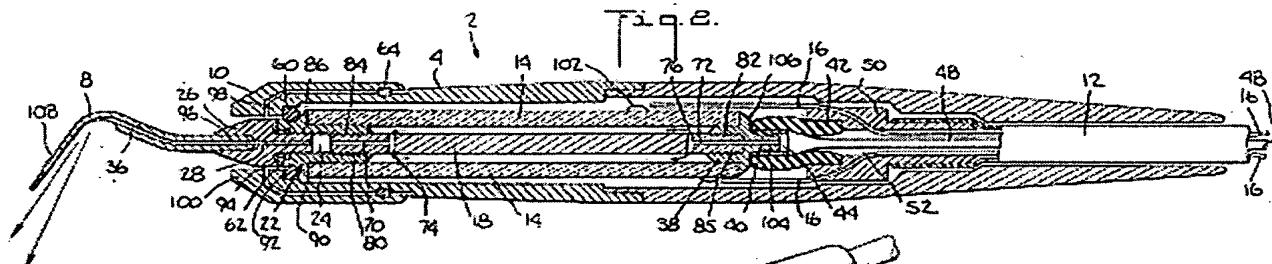
#### 35 U.S.C. § 102(b) Rejections

Claims 1-7, 10, and 12-16 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Hellenkamp, U.S. Patent No. 4,038,571. According to the Office action:

Hellenkamp discloses an ultrasonic insert comprising an elongated body having first and second body ends and [a] central axis; a treatment apply[ing] tip region coupled to the first end, the region having a tip end displaced from the first end; a transducer coupled to the second end; an internal fluid flow channel formed at least in part in the body, extending at an angle to the central axis, and having first and second fluid flow ends, one flow end located on the body and the other flow end located closer to the tip end; and a transverse

channel formed in the body adjacent to the [first] flow end and intersect[ing] the flow channel (figure 2).

The Applicants respectfully disagree with this characterization of Hellenkamp. As shown in Fig. 2 of the reference (reproduced below), the fluid flow channel (36) of Hellenkamp extends at all times *along and coaxial with the central axis*:



In fact, contrary to extending at an angle to the central axis, the fluid passage of Hellenkamp is even called an axial bore (see, e.g., col. 5, lines 23-25: "... the axial bore 36 of the dental workpiece 8 to allow the passage of fluid therethrough.").<sup>1</sup>

The office action further characterizes Hellenkamp as disclosing "a rotary bearing 10." However, element 10 is described in Hellenkamp as a front cap 10 which, when rotated, permits removal of a workpiece (see col. 2, lines 23-27: "The workpiece 8 is positioned at the front end of the dental cleaning device 2 and may be removed by rotation of the front cap 10 which is positioned around the front end of the front portion 4 of the outer case.") This threaded removable front cap 10 does not serve as a rotary bearing, as recited in claims 12 and 13.

Furthermore, claim 1 (as amended) recites, in part "an internal fluid flow channel formed at least in part in the body, extending at an angle to the central axis and having first and second fluid flow ends with one flow end located on the body between the first and

<sup>1</sup> The Applicants submit that Foulkes et al., U.S. Patent No. 5,531,597, does disclose a flow channel in a tip extending at an angle to a central axis, but even if the flow channel of the tip of Hellenkamp (and/or Copeland, discussed *infra*) were modified according to the flow channel of the tip of Foulkes et al. '597 (which the Applicants do not concede is in any way suggested), the Applicants' claims would still be patentably distinguishable.

second body ends with the other flow end located in the tip region, closer to the tip end than is the one flow end; and a transverse channel formed in the body adjacent to the one flow end and which intersects the flow channel.” In Hellenkamp, the front radial bore 74 is not *adjacent to a first flow end of an internal fluid flow channel formed at least in part on the body, whose other flow end is located in the tip region, closer to the tip end than is the one flow end*, as recited in the Applicants’ amended claim 1. To the contrary, the front radial bore 74 is located at a far end of a separate “front axial bore 70,” which is a channel separated from both the axial bore 36 of the workpiece 8 and the axial bore 28 of the tip base 26 by the axial bore 24 of the acoustical transformer 22. The front radial bore 74 works in conjunction with the rear radial bore 76, the front axial bore 70, and the rear axial bore 72 to permit “the passage of fluid between tie rod 18 and piezoelectric crystal 14” which “has the effect of cooling piezoelectric crystal 14.” The cooling of a piezoelectric crystal is not the purpose of the transverse channel formed in the body adjacent to the one flow end and which intersects the flow channel of Applicants’ claim 1.

As to claims 14-16, the Office action characterizes Hellenkamp as disclosing an insert that “carries an elastomeric handle 4 (column 6 line 41) adjacent to the bearing.” However, the cited passage of Hellenkamp merely indicates that “[t]he front portion 4, of the outer case, the rear portion 6 of the outer case, the front cap 10 and the wire holder 50 may all be molded of a synthetic resinous composition, such as “Lexan”. It is not clear whether “a synthetic resinous composition” would have been understood by a person of ordinary skill in the art to be elastomeric.

For at least these reasons, it is respectfully submitted that Hellenkamp does not anticipate any of claims 1-7, 10, and 12-16. Withdrawal of the rejections are respectfully requested.

35 U.S.C. § 102(e) Rejections

Claims 1-7, 9, 10, 12, 13, 16, 21-27, 31-34, 36, 38, 39, 42, and 44 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Copeland, U.S. Patent No. 6,494,714. The Applicants submit for the examiner's consideration a copy of the U.S. Court of Appeals for the Federal Circuit's December 8, 2006 decision in the matter of *Dentsply International, Inc. and Dentsply Research & Development Corp. v. Hu-Friedy Mfg. Co., Inc.*, 05-1612, affirming the district court's finding of no infringement of Copeland, U.S. Patent No. 6,494,714 by Hu-Friedy Mfg. Co., Inc., the assignee of the present application.

According to the Office action, as with the Hellenkamp reference discussed above, Copeland allegedly discloses an internal fluid flow channel extending at an angle to the central axis. The Office action indicates the fluid flow channel relied upon as extending at an angle to the central axis is fluid flow channel 45. However, it is respectfully submitted that the internal fluid flow channel 45 of Copeland does not extend at an angle to the central axis. Indeed, the fluid flow channel 45 is shown in Fig. 1 of Copeland to be in axial alignment with the "central axial longitudinal passageway 41 for fluid flow to the tip 20" (col. 9, lines 9-10). In Fig. 10 of Copeland, the fluid passageway in the tip is directly aligned with the tip central axis C5. Thus, the fluid passageway does not extend at an angle to the central axis. In another embodiment of Copeland, the fluid passageway is described to have a centerline which is offset and parallel to the centerline. See col. 10, lines 29-30. Again, the fluid passageway of Copeland does not extend at an angle to the central axis.<sup>2</sup>

The Office action also cites Copeland as disclosing "an internal flow channel having first and second sections that intersect to form a fluid inlet into the channel of a size (0.014 inch diameter) that is capable of the intended fluid flow rate (figure 1). The sections are substantially perpendicular to one another. One section terminates at a fluid flow output port

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<sup>2</sup> See *supra*, note 1.

in the tip portion.” As discussed above with respect to Hellenkamp, the transverse channel of Applicants’ claim 1 (as amended) is “formed in the body adjacent to the one flow end and which intersects the flow channel” and the flow channel is “an internal fluid flow channel formed at least in part in the body, extending at an angle to the central axis and having first and second fluid flow ends with one flow end located on the body between the first and second body ends with the other flow end located in the tip region, closer to the tip end than is the one flow end”. Copeland does not disclose a transverse channel which is adjacent to one flow end and intersects a flow channel that is formed at least in part in the body, extends at an angle to the central axis, and has first and second fluid flow ends, one of which being located on the body between the first and second body ends and the other located in the tip region, closer to the tip end than the one flow end. Rather, the radial boring (42) connects to a central axial longitudinal passageway 42, which terminates before the tip 20.

For at least the foregoing reasons, it is respectfully submitted that none of claims 1-7, 9, 10, 12, 13, 16, 38, 39, 42, and 44 are anticipated by Copeland, and withdrawal of the rejections is requested.

As to claims 21-27, the Office action does not appear to allege that Copeland discloses achieving a flow rate less than 25 cc/min with fluid pressure in a selected range, as recited in claim 21. Therefore, it is respectfully submitted that claims 21-27 are not anticipated by Copeland.

As to claims 31-34 and 36, the Applicants respond to the rejections under § 102(e) by noting that claim 31 recites, in part “a body portion having first and second spaced apart ends and an *integrally formed tip section*” (emphasis added). The Office action does not appear to allege that Copeland discloses a body portion having an integrally formed tip section. At least because Copeland lacks an integrally formed tip section, Copeland does not anticipate claims 31-34 and 36.

As a result of the integrally formed tip section, there is no discontinuity between the main body portion and the tip section. Such discontinuities tend to disrupt, and therefore dampen, the ultrasonic wave before reaching the tip. To compensate, prior art devices such as Copeland require supplying increased power to the source of the ultrasonic wave. The Applicants' main body with integral tip section advantageously results in comparatively less power consumption.

Another advantage of the integrally formed tip section is that it allows for the fluid supply to the internal fluid flow channel, namely the "transverse slot formed in the body which intersects a body-end of the channel forming a fluid input to the channel," to be arranged in close proximity to an o-ring provided at the portion of a handle closest to the tip portion when the body having the tip portion thereon is assembled in the handle. An advantage of the transverse slot being in close proximity to the o-ring is that such relative positioning minimizes the amount of follow-on flow of fluid after disengagement of a fluid source. Since the chamber in the handle in which the fluid flows is pressurized, if the transverse slot were formed farther back within the handle (as is understood by the Applicants to be a requirement where, as in the case of the radial boring (42) of the cited Copeland reference, the slot or boring is in a separate structural element from the tip section), upon disengagement of a rheostat or similar fluid source, there is typically undesired follow-on flow, as the residual fluid travels from the transverse slot to the fluid flow output in the tip section.

Other advantages of having the tip section formed integrally with the main body portion include reduced manufacturing steps and reduced manufacturing time, inasmuch as there are fewer parts requiring machining and assembly.

35 U.S.C. § 103 Rejections

Claims 8, 28, 29, 37, 40, 41, 43 and 45 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Copeland. Inasmuch as the independent claims from which these claims depend are patentable over Copeland for the reasons described above, including but not limited to Copeland's lack of a transverse and without conceding the allegations in the Office action concerning what might have been obvious to one of ordinary skill in the art with regard to the additional limitations of claims 8, 28, 29, 37, 40, 41, 43 and 45, these dependent claims should also be considered allowable over Copeland.

Claims 11, 30, and 35 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hellenkamp or Copeland in view of Balamuth et al., 3,075,288. Inasmuch as the independent claims from which these claims depend are allowable over Hellenkamp and Copeland, for the reasons described above, and without conceding the allegations in the Office action concerning what might have been obvious to one of ordinary skill in the art with regard to the additional limitations of claims 11, 30 and 35, these dependent claims should also be considered allowable over the proposed combinations of Hellenkamp or Copeland in view of Balamuth et al.

Claims 17 and 18 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hellenkamp in view of Rahman et al., 2002/0040198. Inasmuch as the independent claims from which these claims depend are allowable over Hellenkamp, for the reasons described above, and without conceding the allegations in the Office action concerning what might have been obvious to one of ordinary skill in the art with regard to the additional limitations of claims 17 and 18, these dependent claims should also be considered allowable over the proposed combination of Hellenkamp in view of Rahman et al.

Claims 19 and 20 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hellenkamp in view of Rahman et al. and further in view of Balamuth et

al. Inasmuch as the independent claims from which these claims depend are allowable over Hellenkamp, for the reasons described above, and without conceding the allegations in the Office action concerning what might have been obvious to one of ordinary skill in the art with regard to the additional limitations of claims 19 and 20, these dependent claims should also be considered allowable over the proposed combination of Hellenkamp in view of Rahman et al. and further in view of Balamuth et al.

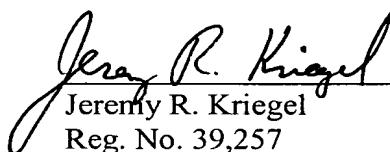
For at least the foregoing reasons, withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

CONCLUSION

Inasmuch as the foregoing amendments overcome the objections and 35 U.S.C. § 112 rejections, and the independent claims are patentable over the Hellenkamp and Copeland references, it is respectfully requested that all claims of the application are in condition for allowance. The Examiner's favorable reconsideration is respectfully solicited. If the Examiner has any questions which might easily be resolved by telephone, the Examiner is invited to call the Applicants' undersigned representative at (312) 474-6300.

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Respectfully submitted,

  
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